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ABSTRACT

This research study investigated the hypothesis that noncontingent social stimulation can elicit infant vocal sounds. The investigation involved an examination of both the course of social elicitation and the nature of the social releasing stimulus. Three experimental conditions were designed to measure: (1) the changes in vocalization rate during 2-minute periods following stimulation; (2) the time between the onset of one infant response and the onset of the next; and (3) the influence of eye contact in eliciting vocalization. Subjects were eight 3-month-old infants. It was concluded that infant vocalizations can be elicited by social stimuli, and that social stimulation must include the opportunity for eye contact. (SDH)

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The Control of Infant Vocalizations by

Response-independent Social Stimulation

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Reinforcement theory has been applied to early social development in studies which show that infant vocalization rate is increased by contingent social stimulation. When we say that operant conditioning increases vocalization rate we mean that the infant vocalizes more frequently when a conditional probability is arranged between his response and the social stimulus and not when the social stimulus is delivered independently of the vocal sounds. But I have often approached an infant who is lying in his crib - quiet and awake, looked at him, smiled and talked to him, and have heard the infant begin to vocalize - I know that I can get an infant to vocalize, I can elicit vocal sounds. How, then, can social stimulation serve only to reinforce and not elicit responding in operant conditioning studies?

Slide 1

In an earlier study that I prepared with Anita Esposito we reported that response-contingent and response-independent social stimulation produced equivalent increases in vocalization rate. You can see that, vocalization rate was similar for the two groups of eight 3-month old infants during baseline and extinction periods when the adult looked at the infant in a face-to-face position, but was unresponsive to all vocal sounds. Vocalization rates were also similar between the two groups who received the same social stimulation (smile, touch, tsk, tsk, tsk sound) at the same time intervals (the groups were yoked); in the contingent group stimulation was dependent upon each vocal sound and in the yoked response-independent it was not. In the final frame of this slide the treatments were reversed for the two groups; now the response-independent group received contingent stimulation and vice versa. We conclude from these data that both contingent and noncontingent

do the job of increasing infant vocalization rate. We do not know whether the two procedures do the job in the same way, that is, by the same process. We conclude, therefore, that noncontingent social stimulation elicits infant vocal sounds. Today we will present data which demonstrate social elicitation in young infants. We asked two questions: What is the course of elicitation? and, What is the nature of the social releaser? To answer the first question we studied changes in vocalization rate during two minute periods following stimulation. The adult leaned over the infant in a face-to-face position and every two minutes smiled, touched the infant's abdomen, and said "Hi baby," and then resumed the unresponsive posture. Four, fixed-time intervals of stimulation ('T2') were given to eight 3-month old infants.

Slide 2

Infants emitted on the average of three vocalizations in the first 30 seconds after stimulation (arrow), and that rate remained relatively stable until after 1½ min post-stimulation when the frequency dropped to 1½ responses. The rate rose significantly immediately after stimulation and in this way we see the course of elicitation. The sudden decrease in rate after 1½ min of no stimulation and rapid increase after stimulation might relate to rapid acquisition and extinction curves seen in most conditioning studies and may cause us to question the appropriateness of baseline comparison periods in social learning studies.

We also studied the course of the distribution of infant vocalizations because we had previously found that response-independent

stimulation caused the infant to produce more bursts of vocal sounds. We, therefore, measured the time between the onset of one response and the onset of the next, since response duration seemed uniform, and plotted these interresponse times (IRTs) in 2-sec bins.

Slide 3

We found that a higher percent of bursts of responses, that is those having IRTs of 0-2 sec (the first bin), occurred in the first 30-sec: following stimulation. The percent of bursts dropped for the last 1½ min of no stimulation. In fact, we found that the greatest percent of bursts occurred within the first 15 sec after stimulation, for in the top panel we've plotted the first and second 15 sec intervals. We can say, therefore, that response-independent stimulation causes a sudden increase in both frequency and bursts of vocalization, and that when we look at these measures independently, the effect on frequency is less transitory than the effect upon distribution. This study shows one way of studying the course of social elicitation.

We studied eye contact as a first step in determining the nature of the social releasing stimulus because I had found in an earlier study that unless infants were able to see the experimenter's eyes the adults behavior was not effective as a social reinforcing stimulus. In the next study the experimenter wore the same eye glasses as the earlier study and for any given 2-min period the lenses were either clear acetate or skin-toned opaque shields.

Slide 4

Each of four infants experienced both eye-contact and no eye-contact treatments under baseline and social stimulation conditions.

Social stimulation (smile, touch, "tsk, tsk, tsk") was presented independently of the infant's vocal sounds whenever the experimenter heard a signal through an earphone. The distribution of stimulation was identical to that received by a subject in the contingent group in the earlier study and stimulation occurred on the average of 8/min. Vocalization rate was rather similar with or without continuous eye contact during the two baseline periods. Lack of eye contact did not suppress vocal rate. Response-independent stimulation caused an increase in vocal rate only when the infant could see the adult's eyes. The same effect was obtained with contingent stimulation and this replicated my earlier studies.

If one were to ask me: "How can I get an infant to be more vocal?", I could not, in good conscience, suggest that one must stand at the crib, wait until the infant emits a sound and then immediately deliver a social reinforcer; I know that, to get an infant to vocalize more frequently, one need only to talk and smile and touch him occasionally, and that social stimulation must include the opportunity for eye contact. Psychopathologists and ethologists have speculated about the importance of eyes in social releasing stimuli: We have presented some empirical support for this notion.

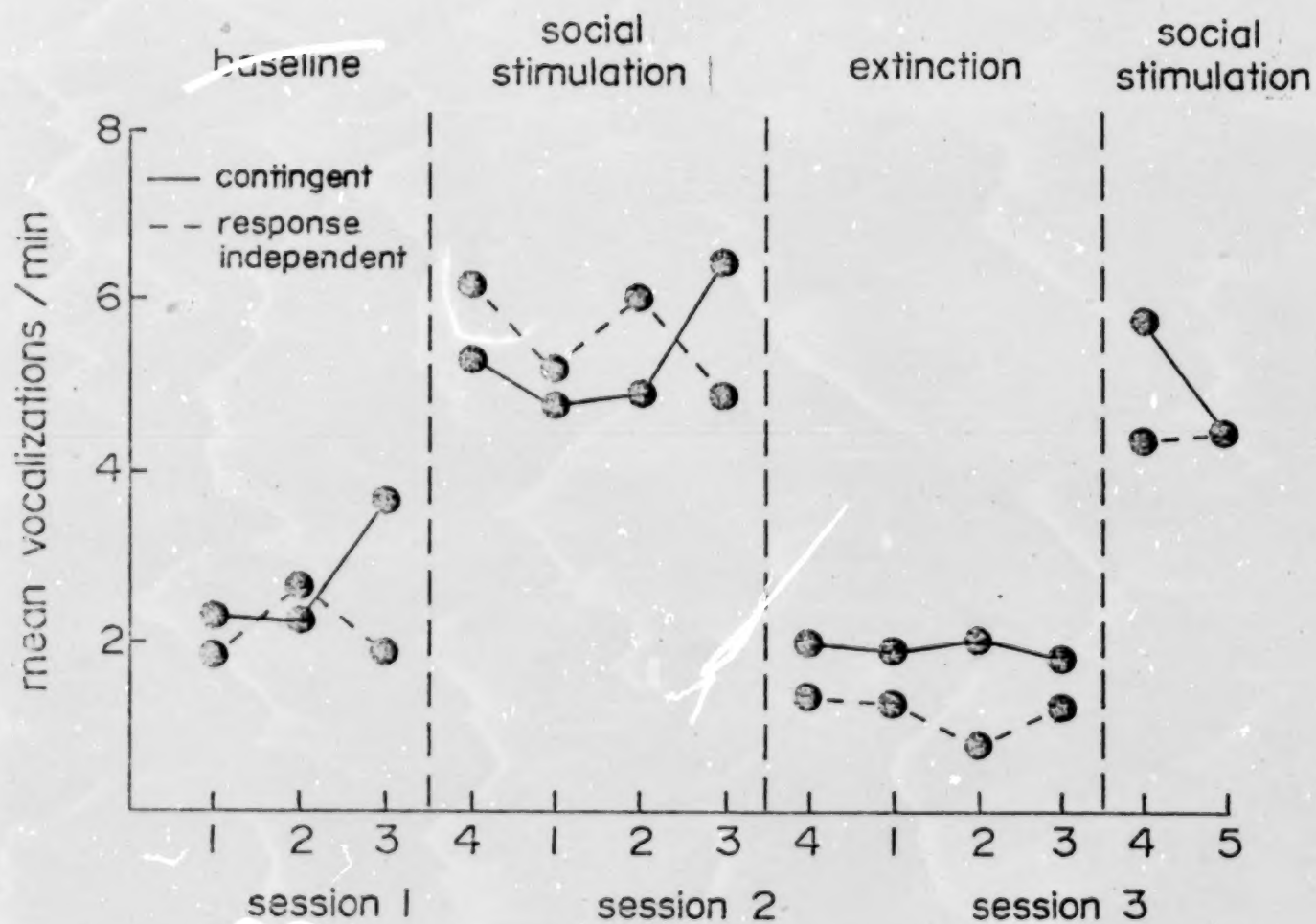


FIG. 1

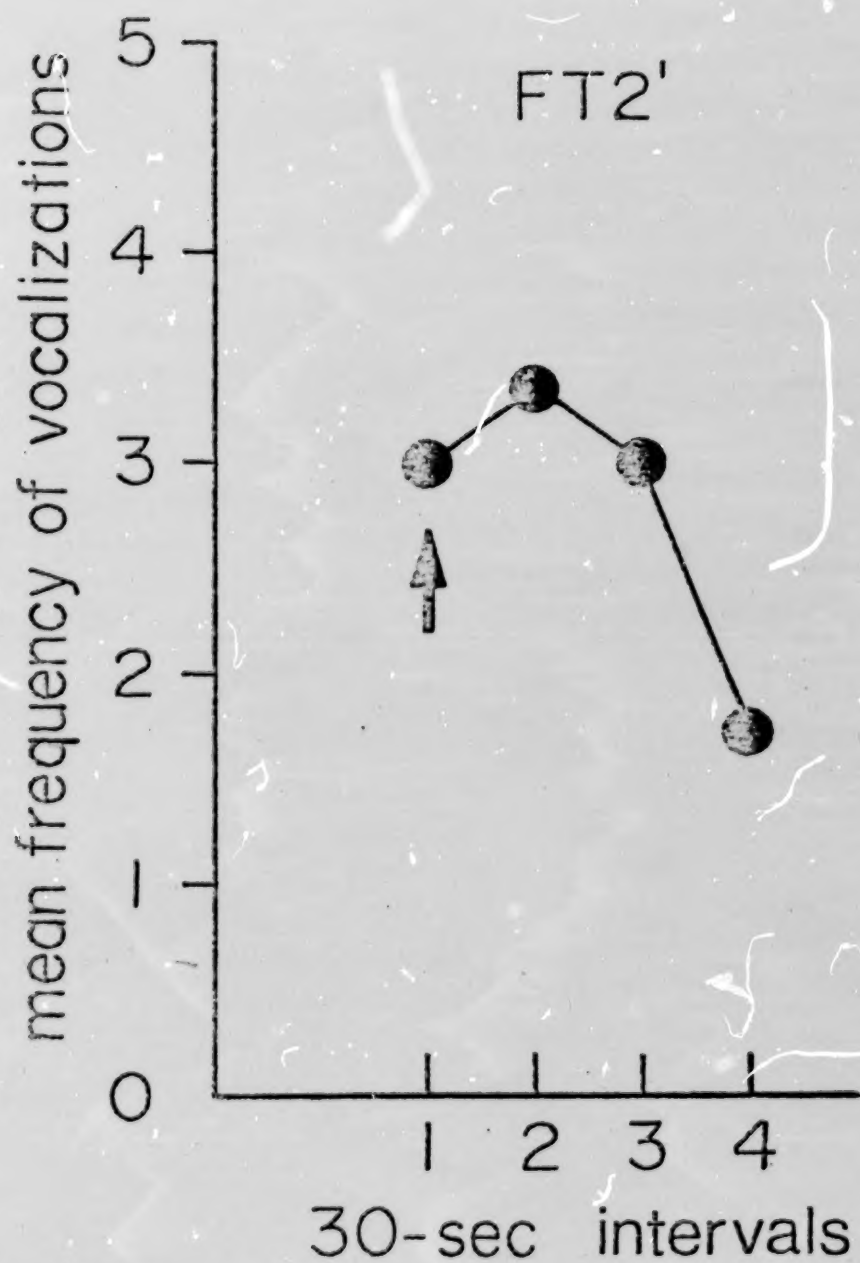


FIG 2

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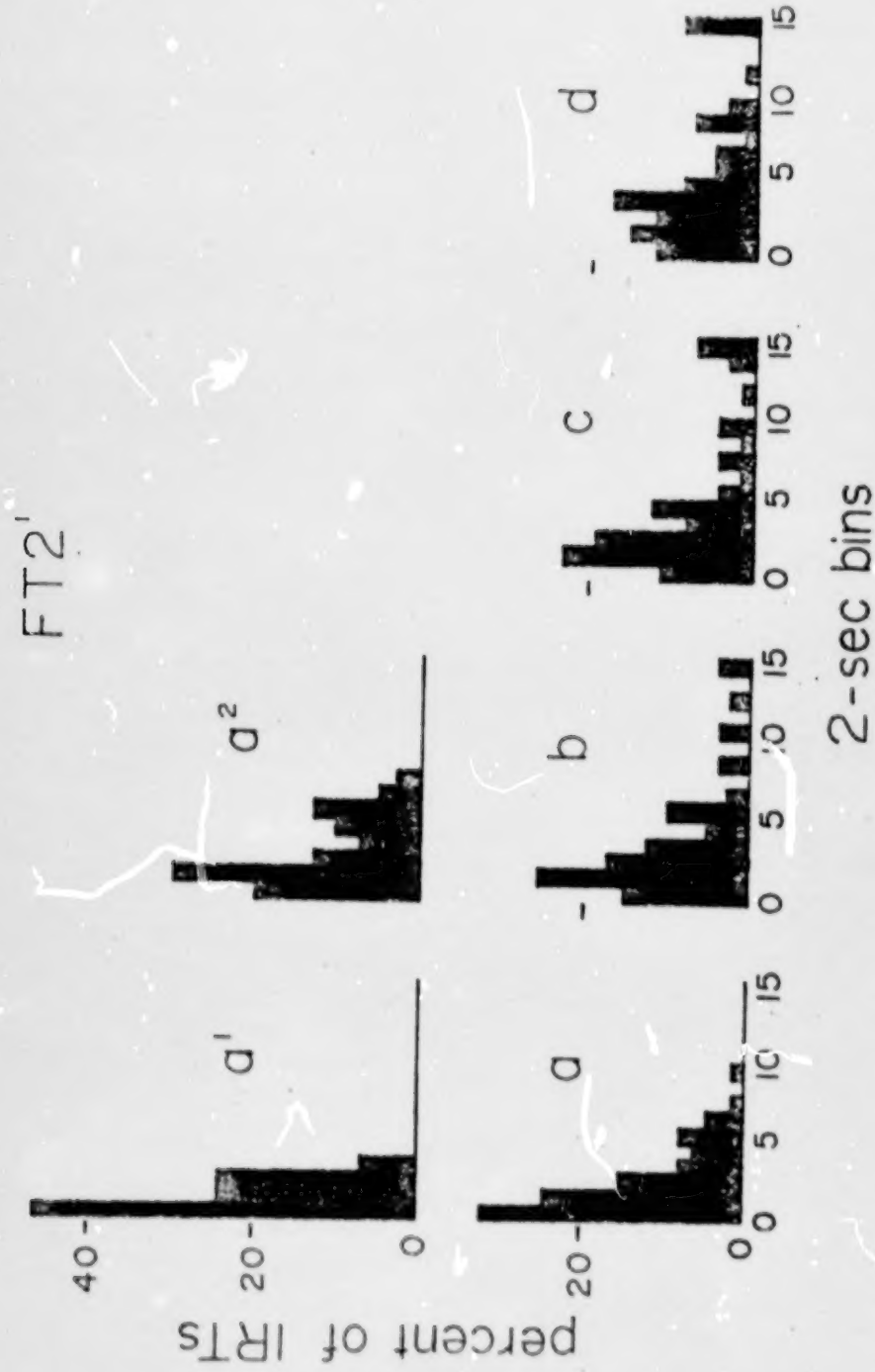


FIG. 3

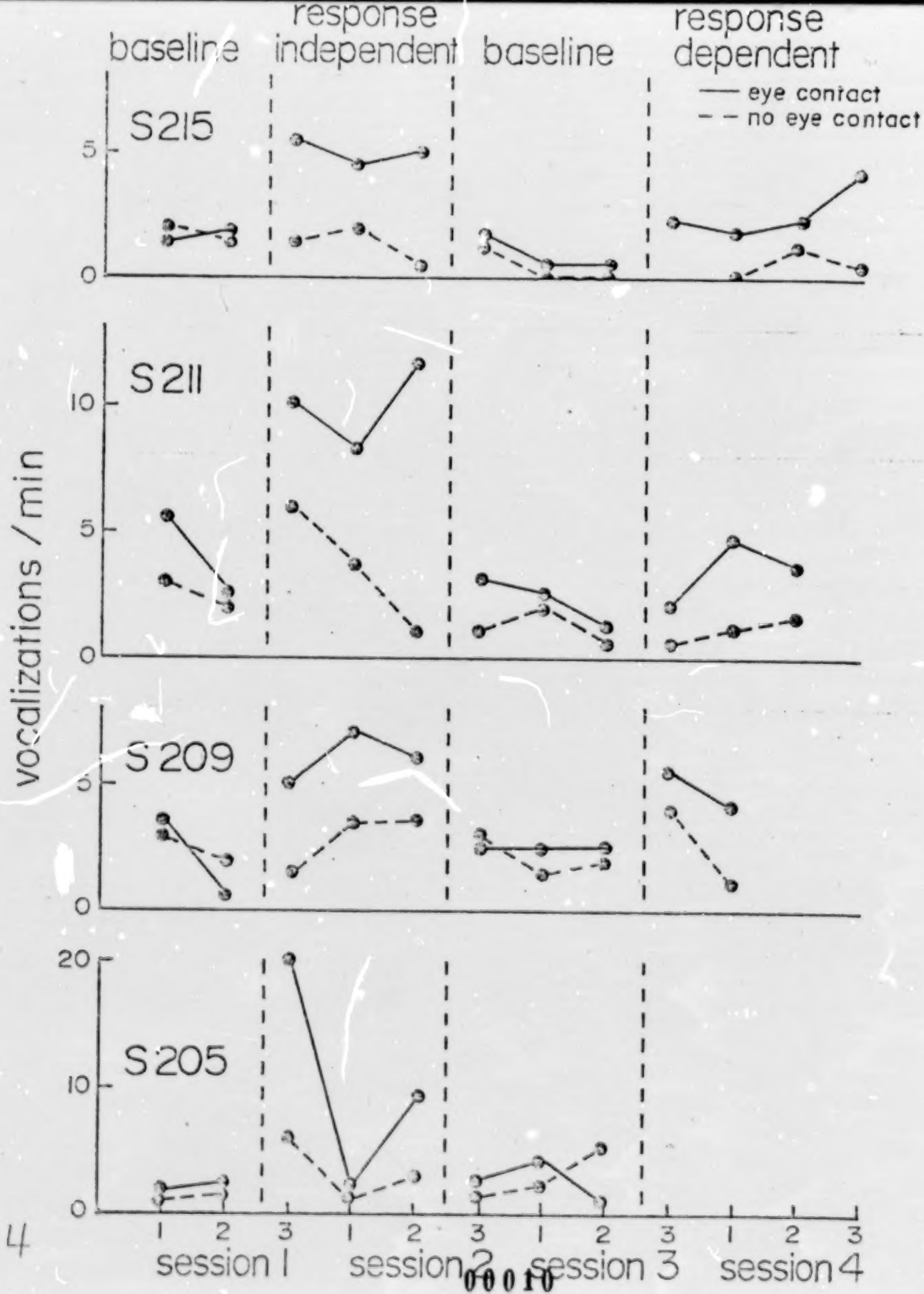


FIG 4